AUTHOR INDEX TO VOLUME 36

References marked (A) are to abstracts of papers presented at meetings of the Physical Society, those marked with (L) refer to Letters to the Editor.

Adams, E. Q. Penetration of radiation—1020(L)

Adams, J. M. Polar properties of single crystals of ice—788(A)

Albright, C. L. Hyperfine structures of some cadmium lines and the hypothesis of nuclear spin—847

Allison F. and E. J. Murphy. Probable number of isotopes of eight metals as determined by a new method—1097(L)

Anderson, W. A remark on the paper of R. C. Tolman: "Mechanical treatment of temperature distribution in the case of radiation"—365(L)

Andrews, D. H. (see Kettering, C. F.)—531

——— Relation between the Raman spectra and the structure of organic molecules—544

Arnott, E. G. F. (see Smyth, H. D.)—1023

Atanasoff, J. V. Dielectric constant of helium—1232

Babcock, H. D. Classification of iron lines—784(A)

Bainbridge, K. T. Simple isotopic constitution of Cs—1668(L)

Baker, E. B. Application of the Fermi-Thomas statistical model to the calculation of potential distribution in positive ions—630

Band, W. A new relativity theory of the unified physical field—1405

Bardeen, J. Diffraction of a circularly symmetrical electromagnetic wave by a co-axial circular disc of infinite conductivity—1482

Barnes, R. B. Infrared absorption of some organic liquids under high resolution—296

Barnes, B. T. Spectral distribution of energy radiated from a new type of tungsten mercury arc—1468

Barnes, S. W. (see Richtmyer, F. K.)—1017(L)

Barnett, S. J. Discovery and rough measurement of a new electron inertia effect—786(A)

——— Further work on the rotation of soft iron and permalloy by magnetization and the gyromagnetic anomaly—789(A)

Bartlett, J. H., Jr. Orbital valency—1096(L)

Beams, J. W. Propagation of luminosity in discharge tubes—997

Bearden, J. A. A double crystal study of scattered x-rays—791

Beattie, J. A. A rational basis for the thermodynamic treatment of real gases and mixtures of real gases—132

——— (see Gillespie, L. J.)—743, 1008

Bedell, F. and J. Kuhn. Linear correction for cathode ray oscillograph—993

Beese, N. C. Thermionic emission of oxide coated cathodes containing a Ni-Ba alloy core—1309

Bender, P. I. Effect of gases on the optically excited cadmium I spectrum—1535

——— II. Optical excitation of cadmium hydride and zinc hydride bands—1543

Bennett, R. D. A search for the source of dielectric polarization—65, 1670 (L)

Bergstein, M., J. F. Rinke, and C. M. Gutheil. Studies in contact rectification. II. Cupric sulfide-magnesium junction—587; errata—1022

Bingham, E. C. and H. J. Fornwalt. Chemical conconstitution and association—381(A)

Bitter, F. On the magnetic properties of metals—978

——— Magnetic susceptibility of gases. II. Temperature dependence—1648

Blair, H. A. Spark spectra of silver and palladium (Ag II and Pd II)—an extension—173

——— Correction and extension of the series of the silver arc spectrum Ag I—1531

Bleakney, W. Ionization potentials and probabilities for the formation of multiply charged ions in helium, neon and argon—1303

Bouma, T. (see Ornstein, L. S.)—679

Bowen, I. S. Presence of neutral oxygen in the gaseous nebulae—600(L)

Boyce, J. C. (see MacInnes, J. M.)—368(L)

Boynton, W. P. Equations of state and thermodynamic functions for a substance with variable specific heat—787(A)

Bradbury, N. E. (see Luhr, O.)—1394

Braun, M. L. Current, pressure, and frequency relationships for the initiation and maintenance of the electrodeless glow discharge—1195

Breit, G. Fine structure of He as a test of the spin interactions of two electrons—383

——— **and F. W. Doermann.** Magnetic moment of the Li_7 nucleus—1262(L)

——— **and F. W. Doermann.** Hyperfine structure of S and P terms of two electron atoms with special reference to Li^+—1732

AUTHOR INDEX TO VOLUME 36

References marked (A) are to abstracts of papers presented at meetings of the Physical Society, those marked with (L) refer to Letters to the Editor.

Adams, E. Q. Penetration of radiation—1020(L)

Adams, J. M. Polar properties of single crystals of ice—788(A)

Albright, C. L. Hyperfine structures of some cadmium lines and the hypothesis of nuclear spin—847

Allison F. and E. J. Murphy. Probable number of isotopes of eight metals as determined by a new method—1097(L)

Anderson, W. A remark on the paper of R. C. Tolman: "Mechanical treatment of temperature distribution in the case of radiation"—365(L)

Andrews, D. H. (see Kettering, C. F.)—531

——— Relation between the Raman spectra and the structure of organic molecules—544

Arnott, E. G. F. (see Smyth, H. D.)—1023

Atanasoff, J. V. Dielectric constant of helium—1232

Babcock, H. D. Classification of iron lines—784(A)

Bainbridge, K. T. Simple isotopic constitution of Cs—1668(L)

Baker, E. B. Application of the Fermi-Thomas statistical model to the calculation of potential distribution in positive ions—630

Band, W. A new relativity theory of the unified physical field—1405

Bardeen, J. Diffraction of a circularly symmetrical electromagnetic wave by a co-axial circular disc of infinite conductivity—1482

Barnes, R. B. Infrared absorption of some organic liquids under high resolution—296

Barnes, B. T. Spectral distribution of energy radiated from a new type of tungsten mercury arc—1468

Barnes, S. W. (see Richtmyer, F. K.)—1017(L)

Barnett, S. J. Discovery and rough measurement of a new electron inertia effect—786(A)

——— Further work on the rotation of soft iron and permalloy by magnetization and the gyromagnetic anomaly—789(A)

Bartlett, J. H., Jr. Orbital valency—1096(L)

Beams, J. W. Propagation of luminosity in discharge tubes—997

Bearden, J. A. A double crystal study of scattered x-rays—791

Beattie, J. A. A rational basis for the thermodynamic treatment of real gases and mixtures of real gases—132

——— (see Gillespie, L. J.)—743, 1008

Bedell, F. and J. Kuhn. Linear correction for cathode ray oscillograph—993

Beese, N. C. Thermionic emission of oxide coated cathodes containing a Ni-Ba alloy core—1309

Bender, P. I. Effect of gases on the optically excited cadmium I spectrum—1535

——— II. Optical excitation of cadmium hydride and zinc hydride bands—1543

Bennett, R. D. A search for the source of dielectric polarization—65, 1670 (L)

Bergstein, M., J. F. Rinke, and C. M. Gutheil. Studies in contact rectification. II. Cupric sulfide-magnesium junction—587; errata—1022

Bingham, E. C. and H. J. Fornwalt. Chemical conconstitution and association—381(A)

Bitter, F. On the magnetic properties of metals—978

——— Magnetic susceptibility of gases. II. Temperature dependence—1648

Blair, H. A. Spark spectra of silver and palladium (Ag II and Pd II)—an extension—173

——— Correction and extension of the series of the silver arc spectrum Ag I—1531

Bleakney, W. Ionization potentials and probabilities for the formation of multiply charged ions in helium, neon and argon—1303

Bouma, T. (see Ornstein, L. S.)—679

Bowen, I. S. Presence of neutral oxygen in the gaseous nebulae—600(L)

Boyce, J. C. (see MacInnes, J. M.)—368(L)

Boynton, W. P. Equations of state and thermodynamic functions for a substance with variable specific heat—787(A)

Bradbury, N. E. (see Luhr, O.)—1394

Braun, M. L. Current, pressure, and frequency relationships for the initiation and maintenance of the electrodeless glow discharge—1195

Breit, G. Fine structure of He as a test of the spin interactions of two electrons—383

——— **and F. W. Doermann.** Magnetic moment of the Li_7 nucleus—1262(L)

——— **and F. W. Doermann.** Hyperfine structure of S and P terms of two electron atoms with special reference to Li^+—1732

Breit, G. and E. O. Salant. Note on frequency shifts in dispersing media—871
Bridgman, P. W. Book review—155, 781
Browne, T. E., Jr. and F. C. Todd. Extinction of short a.c. arcs between brass electrodes—726
——— (see Todd, F. C.)—732
Bryan, A. B. (see Heaps, C. W.)—326
Buchta, J. W. Book reviews—1420, 1517, 1594
Busang, P. F. (see Smith, W. O.)—524
Campbell, J. S. (see Frerichs, R.)—151(L), 1460
Cassen, B. (see Lauritsen, C. C.)—988
Caswell, A. E. A note on the quantization of the solar system—787(A)
Chaffee, E. L. (see Perry, C. T.)—904
Chaffee, M. A. (see Lawrence, E. O.)—1099(L)
Chao, C. Y. Scattering of hard γ rays—1519
Chapman, S. Wind mixing and diffusion in the upper atmosphere—1014(L)
Chase, C. T. Scattering of fast electrons by metals. I. Sensitivity of the Geiger point-discharge counter—984
——— Scattering of fast electrons by metals. II. Polarization by double scattering at right angles—1060
Christy, A. (see Crane, W. O.)—421
——— (see Naudé, S. M.) 1801 (L)
Clark, J. C. (see Ross, P. A.)—378(A)
Coade, E. N. X-ray scattering coefficient as a function of wave-length and atomic number—778(L), 1109
Cohn, B. E. (see Nyswander, R. E.)—1257
Collins, J. R. Effect of high pressure on the near infrared absorption spectrum of certain liquids—305
Colvert, W. W. X-ray absorption in gases—1619
Compton, K. T. An interpretation of pressure and high velocity vapor jets at cathodes of vacuum arcs—706
——— (see Van Voorhis, C. C.)—1435
Condon, E. U. Theory of complex spectra—1121.
——— Book reviews—156, 369, 1594
Constant, F. W. Magnetic properties of dilute cobalt alloys—786(A)
——— Magnetic properties of certain Pt-Co and Pd-Co alloys—1654
Cook, R. V. Formation of striae in a Kundt's tube—1098(L)
Cook, S. R. On an electromagnetic theory of sight and color vision—790(A)
Cooksey, C. D. (see Cooksey, D.)—80
——— **and D. Cooksey.** Precision measurements of the glancing-angle of reflection from calcite for silver ($K\alpha_1$) x-rays by the "method of displacement"—85
Cooksey, D. and C. D. Cooksey. Unreliability of photographic emulsions on glass for recording distances and a method of minimizing this defect—80
Cooksey, D. (see Cooksey, C. D.)—85
Copeland, L. C. Heat of formation of molecular oxygen—1221
Cork, J. M. False lines in x-ray grating spectra—665
Cotton, J. C. (see Knauss, H. P.)—1099(L)
Crane, W. O. and A. Christy. Vibrational quantum analysis of the potassium infrared absorption bands—421
Cravath, A. M. Rate at which ions lose energy in elastic collisions—248
——— Behavior of a mercury vapor arc with a jet of liquid mercury as cathode—1480
Crump, C. C. Book review—1419
Dahl, O. (see Tuve, M. A.)—1261(L)
Dasannacharya, B. Polarization of the continuous x-rays from single electron impacts—1675
Davisson, C. J. Book review—782
Dennison, D. M. Book review—608
——— **and S. B. Ingram.** A new band in the absorption spectrum of methane gas—1451
Dershem, E. and M. Schein. Apparatus for measuring absorption coefficients of soft x-rays in gases and the absorption in air of the $K\alpha$ line of carbon—378(A)
Doermann, F. W. (see Breit, G.)—1262(L), 1732
Donal, J. S., Jr. Abnormal shot effect of ions of tungstous and tungstic oxide—1172
Dooley, D. General Electric type *S*-1 lamp as a spectroscopic source—1476
Dumond, J. W. M. Breadth of Compton modified line—146(L)
——— Evidence for the Richtmyer double jump hypothesis of x-ray satellites—1015(L)
——— Multiple scattering in the Compton effect—1685
——— **and A. Hoyt.** Energy of $K\alpha_3$ of copper as a function of applied voltage with the double crystal spectrometer—799
——— **and A. Hoyt.** Design and technique of operation of a double crystal spectrometer—1702
Dunham, J. L. Isotope effect on band spectrum intensities—1553
Easley, M. A. (see Forsythe, W. E.)—150(L)
Eckart, C. Calculation of energy values—149(L)
——— Theory and calculation of screening constants—878
——— Wave mechanics of deflected electrons—1014(L), 1514(L)
——— (see Hughes, D. S.)—694
Ehrenfest, P. (see Tolman, R. C.)—1791
Eldridge, J. A. Book review—1516
Ellis, J. W. (see Kinsey, E. L.)—603(L)
Ellwood, W. B. An experimental determination of the change in temperature accompanying change in magnetization of iron—1066

Evans, H. P. A two dimensional boundary value problem for the transmission of alternating currents through a semi-infinite heterogeneous conducting medium—1579

Ewing, M. An x-ray study of the structure of electrets—378(A)

Farnsworth, H. E. and V. H. Goerke. Distinction between contact-potential effects and true reflection coefficients for low-velocity electrons—1190

——— Inner potential of a copper crystal—1799(L)

Faust, L. Y. Fine structure of the *K*-radiation of the lighter elements—161

Ffolliott, C. F. Raman spectra of geometric isomers —367(L)

Findlay, J. H. Spark spectrum of cobalt, Co II—5

Focke, A. B. Principal magnetic susceptibilities of bismuth single crystals—319

Foote, P. D. (see Smith, W. O.)—524

Fornwalt, H. J. (see Bingham, E. C.)—381(A)

Forsythe, W. E. and M. A. Easley. Some peculiarities of the spectrum of the tungsten mercury arc —150(L)

Found, C. G. (see Langmuir, I.)—604(L)

Franklin, D. and E. R. Laird. Raman effect in trimethylethylene—147(L)

Freed, S. and C. Kasper. A simple accurate method for measuring the diamagnetic susceptibility of dissolved substances—1002

Frenkel, J. On the electrical resistance of contacts between solid conductors—1604

Frerichs, R. and J. S. Campbell. Experimental evidence for the existence of quadrupole radiation —151(L), 1460

——— Singlet system of the oxygen arc spectrum and the origin of the green auroral line—398

Froman, D. K. A photographic method of determining atomic structure factors—1330

——— A note on the extrapolation of atomic structure factor curves—1339

Geer, W. (see Utterback, C. L.)—785(A)

Gessner, G. S. Luminescence of zinc sulphide under the action of alpha, beta and gamma-rays—207

Giauque, W. F. and H. L. Johnston. On the entropy of hydrogen—1592(L)

Gillespie, L. J. Gibbs-Dalton law of partial pressures—121

——— **and J. A. Beattie.** Thermodynamic treatment of chemical equilibria in systems composed of real gases. I. An approximate equation for the mass action function applied to the existing data on the Haber equilibrium—743

——— **and J. A. Beattie.** Thermodynamic treatment of chemical equilibria in systems composed of real gases. II. A relation for the heat of reaction applied to the ammonia synthesis reaction. Energy and entropy constants for ammonia—1008

Gingrich, N. S. Double crystal analysis of scattered x-rays—364(L)

——— An analysis of scattered x-rays with the double crystal spectrometer—1050

Goerke, V. H. (see Farnsworth, H. E.)—1190

Goetz, A. and M. F. Hasler. Thermoanalysis of metal single crystals and a new thermoelectric effect of bismuth crystals grown in magnetic fields —1752

Goucher, F. S. Contact resistance and microphonic action—375(A)

Granath, L. P. Angular momentum of the Li_7 nucleus—1018(L)

Gray, F. Contact resistance and microphonic action —375(A)

Green, J. B. Incomplete Paschen-Back effect—157; 379(A)

Green, M. C. Effect of small angle scattering on the electron absorption coefficient—239

——— Scattering of electrons in small angles by gas molecules and its effect on the electron absorption coefficient—786(A)

Gronwall, T. H. A diaphantine equation connected with the hydrogen spectrum—1671(L)

Gunn, R. Origin of the variations in the sun's rotational velocity—1251

Gutheil, C. M. (see Bergstein, M.)—587; 1022

Hafstad, L. R. (see Tuve, M. A.)—1261(L)

Ham, W. R. (see LeGalley, D. P.)—379(A)

Hartig, H. E. Book review—156

Hasler, M. F. (see Goetz, A.)—1752

Harrington, M. C. (see Uyterhoeven, W.)—709

Harrison, G. R. and P. A. Leighton. Fluorescent dry plates for photographic photometry—779(L)

Harvey, A. and F. A. Jenkins. Interpretation of the spectra of CaF and SrF—1413(L)

Heaps, C. W. and A. B. Bryan. Discontinuous changes in length accompanying the Barkhausen effect in nickel—326

Henderson, G. H. and J. L. Nickerson. Range of the α-particles from thorium—1344

Henderson, J. E. and E. B. Jordan. Reflection of x-rays from thin metallic films—785(A)

Hershberger, W. D. (see Klein, E.)—1262(L)

Hicks, V. Experiments on the relative intensities of x-ray lines in the *L*-spectrum of tantalum— 785(A), 1273

Hidnert, P. and W. T. Sweeney. Thermal expansion of M-M-M alloy—787(A)

Hilberry, N. (see Smith, H.)—374(A)

Hoffmann, B. (see Veblen, O.)—810

Holzer, R. E. Absorption of slow hydrogen positive rays in hydrogen—788(A), 1204

Hopfield, J. J. Continuous spectrum in the region 500–1100A—784(A)

——— Newoxygenspectraintheultraviolet—789(A)

Hopfield, J. J. New spectra in nitrogen—789(A)
Hoxton L. G. Note on the pressure variation of specific heats of gases derived from compressibility data—1091
Houston, W. V. Book review—1674
——— (see Huff, L. D.)—842
Hoyt, A. (see Dumond, J. W. M.)—799, 1702
Hoyt, F. C. Structure of emission lines—380(A), 860
Hubbard, J. C. Problems in acoustic interferometry in gases—1668(L)
Huff, L. D. and W. V. Houston. Appearance of "forbidden lines" in spectra—842
Hughes, A. L. and G. E. M. Jauncey. An attempt to detect collisions of photons—773
——— **and C. M. Van Atta.** A second ionization potential in potassium vapor—214
Hughes, D. S. and C. Eckart. Effect of the motion of the nucleus on the spectra of Li I and Li II—694
Hulburt, E. O. Spectra of gases lighted with strong electrical discharges—13
——— Wind mixing and diffusion in the upper atmosphere—1264(L)
——— Ultraviolet light theory of aurorae and magnetic storms (continued)—1560
Hull, A. W. Book review—369
Humphreys, C. J. Interference measurements in the first spectra of krypton and xenon—380(A)
Hutchisson, E. Band spectra intensities for symmetrical diatomic molecules—410
Huxford, W. S. (see Stowell, E. Z.)—1348
Hyatt, J. M. (see Wold, P. I.)—375(A)
Hyman, H. H. Resonance (*B-A*) band system of the hydrogen molecule—187
Ingram, S. B. (see Dennison, D. M.)—1451
Jauncey, G. E. M. (see Hughes, A. L.)—773
Jenkins, F. A. (see Harvey, A.)—1413(L)
Johnson, T. H. Diffraction of hydrogen atoms—381(A)
Johnston, H. L. (see Giauque, W. F.)—1592(L)
Jordan, E. B. (see Henderson, J. E.)—785(A)
Kabakjian, D. H. Luminescence due to radioactivity—379(A)
Kaplan, J. Band intensities—778(L)
——— Some properties of the third positive carbon and associated bands—784(A)
——— Quenching of mercury resonance radiation by nitrogen and carbon monoxide—788(A)
Kasper, C. (see Freed, S.)—1002
Kemble, E. C. and F. F. Rieke. Interaction between excited and unexcited hydrogen atoms at large distances—153(L)
Kennard, E. H. Wave mechanics of deflected electrons—1667(L)
Kettering, C. F., L. W. Shutts and D. H. Andrews. A representation of the dynamic properties of molecules by mechanical models—531
Keyes, F. G. and J. G. Kirkwood. Dielectric constant of carbon dioxide as a function of temperature and density—754
——— **and J. G. Kirkwood.** Dielectric constant of ammonia as a function of temperature and density—1570
Kievit, B. and G. A. Lindsay. Fine structure in the x-ray absorption spectra of the *K* series of the elements calcium to gallium—648
Kimball, W. S. Entropy, elastic strain and the second law of thermodynamics, the principles of least work and of maximum probability—377(A)
Kinsey, E. L. and J. W. Ellis. Electrolytic dissociation of nitric acid as revealed by its infrared absorption spectrum—603(L)
Kirkwood, J. G. (see Keyes, F.)—754, 1570
Klein, E. and W. D. Hershberger. Use of the Pierce acoustic interferometer for the determination of absorption in gases for high frequency sound waves—1262(L)
Knauss, H. P. and J. C. Cotton. Intensity changes of Cameron bands in the electrodeless discharge—1099(L)
Kobel, E. Pressure and high velocity vapour jets at cathodes of a mercury vacuum arc—1636
Koller, L. R. Photoelectric emission from thin films of caesium—1639
Kozanowski, H. N. and N. H. Williams. Shot effect of the emission from oxide cathodes—1314
Kruger, P. G. New lines in the arc and spark spectrum of helium—855
Kuhn, J. (see Bedell, F.)—993
Kurth, E. H. On the recombination of electrons with caesium ions—374(A)
Laird, E. R. (see Franklin, D.)—147(L)
——— (see Sterling, V.)—148(L)
Langmuir, I. and C. G. Found. Metastable atoms and electrons produced by resonance radiation in neon—604(L)
Lauritsen, C. C. and B. Cassen. High potential x-ray tube—988
——— Spectrum of the radiation from a high potential x-ray tube—1680
Lawrence, E. O. and L. B. Linford. Effect of intense electric fields on the photoelectric properties of metals—482
——— **and M. A. Chaffee.** On the direction of emission of photoelectrons from potassium vapor by ultraviolet light—1099(L)
LeGalley, D. P., W. R. Ham, and M. W. White. Some measurements of currents through the walls of x-ray tubes—379(A)
Lewis, A. B. Coupled vibrations with applications to the specific heat and infrared spectra of crystals—568

Lewis, G. N. Principle of identity and the exclusion of quantum states—1144
Leighton, P. A. (see Harrison, G. R.)—779(L)
Lille, H. R. Margules method of measuring viscosities modified to give absolute values—347
Linder, E. G. Organic reactions in gaseous electrical discharge. I. Normal paraffin hydrocarbons—374(A), 1375
Lindsay, G. A. (see Kievit, B.)—648
Linford, L. B. (see Lawrence, E. O.)—482
——— Electrostatic surface fields near thoriated tungsten filaments by a photoelectric method—1100(L)
Livingood, J. J. (see Shenstone, A. G.)—380(A)
Loeb, L. B. Mobility of Na^+ ions in H_2—152(L) 790(A)
Lozier, W. W. A study of the velocities of H^+ ions formed in hydrogen by dissociation following electron impact—1285
——— Negative ions in hydrogen and water vapor—1417(L)
Lucy, A. A method offered as a means of computing Planck's constant without involving the charge on the electron—367(L)
Luhr, O. Recombination of ions in argon, nitrogen and hydrogen—24, 788(A)
——— Recombination of ions in air and oxygen in relation to the nature of gaseous ions—787(A)
——— **and N. E. Bradbury.** Mobility of aged ions in air—1394
Lynch, W. A. (see Smith, H.)—374(A)
MacDougall, F. H. Book review—371
MacGillavry, D. On the entropy of hydrogen—1398
MacInnes, J. M. and J. C. Boyce. Gas discharge wave-length list in extreme ultraviolet—368(L)
McAlister, E. D. High resolution in the near infrared—784(A)
——— **and H. J. Unger.** Differences in the absorption spectrum of benzene in the liquid and vapor state—1799(L)
McKeehan, L. W. Book review—608
——— Electrical resistance of nickel and permalloy wires as affected by longitudinal magnetization and tension—948
——— Magnetostriction in nickel—1014(L)
——— Molecular field and atomic order in ferromagnetic crystals and in hydrogenized iron—1512(L)
——— Magnetostriction and magnetic hysteresis—1670(L)
McMillen, J. H. Angle and energy distribution of electrons scattered by helium, argon and hydrogen—1034
Mack, J. Book review—609
Manning, K. V. (see Richtmyer, F. K.)—1017(L)
Margenau, H. Second virial coefficient for gases: a critical comparison between theoretical and experimental results—1782
Maxwell, L. R. Average life for ionized helium—379(A)
Mazumder, K. C. Absorption of x-rays by lithium—457
Merritt, E. and D. R. Morey. Polarized fluorescence of solutions of rhodamine-B and uranine—1386
Metcalf, G. F. and B. J. Thompson. A low grid current vacuum tube—1489
Michels, W. C. Optical excitation function of helium—604(L), 1362
Millikan R. A. On the question of the constancy of the cosmic radiation and the relation of these rays to meteorology—1595
Milne, W. E. Book review—1673
Mitchell, A. C. G. Behavior of positive ions in hydrogen—381(A)
——— Polarization of mercury lines in stepwise radiation—1589(L)
Montgomery, C. G. Magnetic isotropy of copper crystals—498
——— Magnetic isotropy of a paramagnetic alum—1661
Morey, D. R. (see Merritt, E.)—1386
Morse, P. M. (see Stueckelberg, E. C. G.)—16
——— (see Robertson, H. P.)—375(A)
Mrozowski, S. On the origin of the bands in the spectrum of mercury vapor—1168
——— On the incomplete polarization of the mercury resonance radiation—1591(L)
Mulliken, R. S. Interpretation of the visible halogen bands—364(L)
——— Report on notation for spectra of diatomic molecules—611
——— Electronic states in the visible halogen bands—699
——— Correlation of atomic J values and molecular quantum numbers with applications to halogen, alkaline earth hydride, and alkali molecules—1440
Murnaghan, F. D. Book review—609
Murphy, E. J. (see Allison, F.)—1097(L)
Muskat, M. Dispersion formula and Raman effect for the symmetrical top, an erratum—363
Muzzey, D. S. Jr. Some measurements of the longitudinal elastic frequencies of cylinders using a magnetostriction oscillator—935
Nadai, A. Some applications of the theory of plastic deformations of ductile metals—762
——— **and A. Christy.** Vibrational and rotational analysis of the S_2 bands—1801(L)
Naudé, S. M. Isotopes of nitrogen, mass 15, and oxygen, mass 18 and 17, and their abundances—333

Nickerson, J. L. (see Henderson, G. H.)—1344
Nottingham, W. B. Work functions and thermionic constant "*A*" determined for toriated tungsten —376(A)
Nutting, F. L. Position and structure of the modified line of the spectrum of scattered x-rays—1267
Nyswander, R. E. and B. E. Cohn. Tribothermoluminescence—1257
O'Brien, B. Energy distribution in the ultraviolet spectrum of skylight—381(A)
Olpin, A. R. Method of enhancing the sensitiveness of alkali metal photoelectric cells—251
——— Inhibition of photoelectric emission by near infrared light—376(A)
Ornstein, L. S. and T. Bouma. Intensity measurements in the spectrum of nickel and cobalt—679
——— (see Uhlenbeck, G. E.)—823
Osgood, T. H. Book reviews—781, 782
Page, L. Deflection of electrons by a magnetic field on the wave mechanics—444
——— Effect of the earth's electric and magnetic fields on ions in the atmosphere—601(L)
——— Wave mechanics of deflected electrons—1418(L)
——— Book reviews—369, 610
Pauling, L. Rotational motion of molecules in crystals—430
Perry, C. T. and E. L. Chaffee. A determination of *e/m* for an electron by direct measurement of the velocity of cathode rays—904
Peters, H. On the fluorescence of quartz under the influence of cathode rays of low voltage—1631
Pfund, A. H. Infrared filters of controllable transmission—71
Pielemeier, W. H. Ultrasonic velocity and absorption in oxygen—1005
——— Use of the Pierce acoustic interferometer—1667(L)
Plesset, M. S. (see Weigle, J. J.)—373(A)
——— Relativistic wave mechanics of electrons deflected by a magnetic field—1728
Pugh, E. M. Hall effect and the magnetic properties of some ferromagnetic materials—1503
——— **and C. A. Swartz.** Cataphoresis in rotating electric fields—787(A), 1495
Rashevsky, N. On chain reactions caused by physical structure—376(A)
Reich, H. J. A new type of glow-discharge tube—373(A)
Richtmyer, F. K., S. W. Barnes, and K. V. Manning. Hyperfine structure of x-ray lines—1017(L)
——— **and L. S. Taylor.** Intensity of x-ray satellites —1044
——— Book review—1673
Rieke, F. F. (see Kemble, E. C.)—153(L)
Rinke, J. F. (see Bergstein, M.)—587; 1022
Robertson, H. P. and P. M. Morse. Effect of collisions on potential distribution in positive ion sheaths—375(A)
Roller, D. Photoelectric behavior of solid and liquid mercury—738
Rolnick, H. Tension coefficient of resistance of metals—506
Rosen, N. and M. S. Vallarta. Spherically symmetrical field in the unified theory—110
Ross, P. A. and J. C. Clark. Modified line in scattered x-rays—378(A)
Rossi, B. On the magnetic deflection of cosmic rays —606(L)
Ruark, A. E. Book review—155
Russell, H. N. A note on Zeeman patterns—1590(L)
Salant, E. O. (see Breit, G.)—871
——— **and A. Sandow.** Raman effect of HBr and HI—1591(L)
Sandow, A. (see Salant, E. O.)—1591(L)
Sawyer, R. A. Excitation processes in the hollow cathode discharge—44
Schein, M. (see Dershem, E.)—378(A)
Shenstone, A. G. and J. J. Livingood. Spark spectrum of rhodium—380(A)
——— Note on wave-lengths in the vacuum copper arc—603(L)
——— Arc spectrum of palladium—669
——— Book review—607
Shereshefsky, J. L. Corresponding state of maximum surface tension of saturated vapors—377(A)
Shutts, L. W. (see Kettering, C. F.)—531
Silverman, S. Adsorption of methyl alcohol films on rock-salt—311
Skinner, E. W. Diffraction of x-rays in liquids: effect of temperature—1625
Slater, J. C. Atomic shielding constants—57
——— Book review—1516
Smith, H., W. A. Lynch and N. Hilberry. Electrodeless discharge in mercury vapor—374(A)
Smith, P. T. Ionization of helium, neon, and argon by electron impact—1293
Smith, S. A note on the spectra of doubly and trebly ionized lead—1
Smith, W. O., P. D. Foote and P. F. Busang. Capillary retention of liquids in assemblages of homogeneous spheres—524
Smyth, H. D. and E. C. G. Stueckelberg. Ionization of carbon dioxide by electron impact—472
——— **and E. G. F. Arnott.** Canal ray and electron excitation of the band spectrum of nitrogen—1023
——— (see Stueckelberg, E. C. G.)—478
Soderman, M. Structure of *K*-radiation from C, B, and Be—1414(L)
Soh, H. P Non-statical solution of Einstein's law

of gravitation in a spatially symmetrical field—1515(L)

Soller, T. Velocity distribution of secondary electrons from molybdenum—1212

Stauffer, L. H. Electro-optical modification of light waves—1352

Stauss, H. E. Use of the refraction of x-rays for the determination of the specific charge of the electron—1101

Steadman, L. T. Wave-length measurements of gamma-rays from radium and its products—460

Sterling, V. and E. R. Laird. Raman effect in solutions of sodium nitrate of varying concentration—148(L)

Stewart, G. W. Effect of electric field upon x-ray diffraction pattern of a liquid—1413(L)

——— Book review—1265

Stewart, J. Q. Fundamental correspondences between geometry and thermodynamics—377(A)

Stibitz, G. R. Vibrations of a non-planar membrane—513

Stowell, E. Z. and W. S. Huxford. Possibilities of the oscillating arc in spectrochemical analysis—1348

Strong, J. A method for growing large crystals of the alkali halides—1663

Stueckelberg, E. C. G. and P. M. Morse. Computation of the effective cross section for the recombination of electrons with hydrogen ions—16

——— **and H. D. Smyth.** Ionization of nitrous oxide and nitrogen dioxide by electron impact—478

——— (see Smyth, H. D.)—472

Swann, W. F. G. Book review—1265

Swartz, C. A. (see Pugh, E. M.)—787(A), 1495

Sweeney, W. T. (see Hidnert, P.)—787(A)

Taylor, L. S. (see Richtmyer, F. K.)—1044

Terenin, A. Photoionization of salt vapors—147(L)

Thomas, C. H. Potential drop-current relations of a Geissler discharge from a hollow cathode—374(A)

Thompson, B. J. High efficiencies of emission from oxide-coated filaments—1415(L); erratum—1802

——— (see Metcalf, G. F.)—1489

Thompson G. E. Velocity of ultrasonic waves in water vapor—77

Tiedeman, J. A. Relation between the number of electrons ejected photoelectrically from the cathode and the time lag of the spark—376(A)

Todd, F. C. (see Browne, T. E. Jr.)—726

——— **and T. E. Browne, Jr.** Restriking of short a.c. arcs—732

Tolman, R. C. A remark on the letter of W. Anderson—365(L)

——— Book review—370

——— **and P. Ehrenfest.** Temperature equilibrium in a static gravitational field—1791

Tuve, M. A., L. R. Hafstad, and O. Dahl. High-voltage tubes—1261(L)

——— Note on the production of extremely high voltages—1576

Uhlenbeck, G. E. and L. S. Ornstein. On the theory of the Brownian motion—823

——— (see Young, L. A.)—1154

——— **and L. A. Young.** The value of e/m by deflection experiments—1721

Unger, H. J. Near infrared spectrum of Hg—784(A)

——— (see McAlister, E. D.)—1799(L)

Utterback, C. L. and W. Geer. Electronic emission from a metal target bombarded with positive ions—785(A)

Uyterhoeven, W. and M. C. Harrington. Secondary emission from metals by impact of metastable atoms and positive ions—709

Valasek, J. Fine structure of certain x-ray emission lines—1523

Vallarta, M. S. (see Rosen, N.)—110

Van Atta, C. M. (see Hughes, A. L.)—214

Van Voorhis, C. C. and K. T. Compton. Heats of condensation of electrons on several metals in several ionized gases—1435

Vavilov, S. On the attempt to detect collisions of photons—1590(L)

Veblen, O. and B. Hoffmann. Projective relativity—810

Wall, C. N. Potential and potential energy of space lattices—1243

Watson, W. W. Evidence for Be isotope of mass 8 in the BeH band spectrum—1019(L)

——— Zeeman effect in the ZnH and CdH bands—1134

Weigle, J. J. and M. S. Plesset. Preliminary measurements of the mean free path of potassium atoms in nitrogen—373(A)

Werth, M. Relative efficiency of the Hg-arc lines in exciting the Raman spectrum of benzol—1096(L)

White, H. E. Relative intensities in hyperfine structure multiplets—1800(L)

White, M. W. (see LeGalley, D. P.)—397(A)

Williams, N. H. (see Kozanowski, H. N.)—1314

Winans, J. G. New bands in the absorption spectrum of mercury—1020(L)

Winch, R. P. Photoelectric outgassing—601(L)

Wold, P. I. and J. M. Hyatt. Hall effect in tellurium amalgams—375(A)

Wood, R. W. Improved technique for the Raman effect—1421

——— Raman spectra of benzene and diphenyl—1431

Workman, E. J. A new method of measuring the variation of the specific heats (c_p) of gases with pressure—1083

Wyckoff, R. W. G. Atomic scattering powers of nickel, copper and iron for various wave-lengths —1116

Yates, R. C. Elastic character of the homopolar chemical bond—555

——— Study of the small vibrations of six particles in a system analogous to the benzene ring—563

Young, L. A. and G. E. Uhlenbeck. On the Wentzel-Brillouin-Kramers approximate solution of the wave equation—1154

——— (see Uhlenbeck, G. E.)— 1721

Zahl, H. A. Reflection of cadmium and zinc atoms from sodium chloride crystals—893

Zeleny, J. Mobilities of ions in dry and moist air—35

——— Book review—156

Zemansky, M. W. Absorption and collision broadening of the mercury resonance line—219, 380(A)

——— New experimental determination of effective cross-sections for the quenching of mercury resonance radiation—919

——— Absorption and collision broadening of resonance radiation—1591(L)

Zener, C. Analytic atomic wave functions—51

Zwicky, F. Energy changes related to the secondary structure of crystals—378(A)

ANALYTIC SUBJECT INDEX TO VOLUME 36

References marked (A) are to abstracts of papers presented at meetings of the American Physical Society, those marked with (L) refer to letters to the Editor.

Absorption of light (see also **X-Rays, absorption**)
Hg 2537 in Hg vapor, broadening, M. W. Zemansky—219, 380(A), 1591(L)
Liquids, infrared, effect of pressure, J. R. Collins—305
Organic liquids in infrared, high resolution, R. B. Barnes—296

Acoustics
Absorption of high frequency sound, E. Klein, W. D. Hershberger—1262(L)
Kundt's tube, striae, R. V. Cook—1098(L)
Ultrasonic velocity and absorption in oxygen, W. H. Pielemeier—1005, 1667(L); J. C. Hubbard—1668(L)
Ultrasonic waves, velocity in water vapor, G. E. Thompson—77

Adsorption
Methyl alcohol on rock salt, S. Silverman—311

Alloys
Electrical resistance, magnetization and tension of Ni and permalloy, L. W. McKeehan—948
Gyromagnetic anomaly and rotation by magnetization of permalloy, S. J. Barnett—789(A)
Magnetic properties of Pt-Co and Pd-Co, F. W. Constant—786(A), 1654
Thermal expansion of M-M-M, P. Hidnert, W. T. Sweeney—787(A)
Thermionic emission from oxide-coated Ni-Ba alloy, N. C. Beese—1309

Alpha particles
Range from Th, G. H. Henderson, J. L. Nickerson—1344

Arcs (see also **Discharge of electricity in gases, Sparks**)
Extinction of short a.c. arcs between brass electrodes, T. E. Browne, Jr., F. C. Todd—726
General Electric type S-1 lamp, spectrum, D. Dooley—1476
Hg arc, moving jet cathode, A. M. Cravath—1480
Oscillating arc in spectrochemical analysis, E. Z. Stowell, W. S. Huxford—1348
Pressure and vapor jets at cathode, K. T. Compton—706; E. Kobel—1636
Restriking of short a.c. arcs, F. C. Todd, T. E. Browne, Jr.—732
Tungsten mercury arc, spectral energy, B. T. Barnes—1468
Tungsten mercury, peculiarities in spectrum, W. E. Forsythe, M. A. Easley—150(L)

Astrophysics
Quantization of solar system, A. E. Caswell—787(A)
Variations in the sun's rotational velocity, R. Gunn—1251

Atmospheric electricity
Aurorae and magnetic storms, theory of, E. O. Hulburt—1560
Ionization of cosmic rays, R. A. Millikan—1595
Ions in upper atmosphere, motion of, L. Page—601(L)

Atomic beams
Cs^+ in H_2, pressure changes, A. C. G. Mitchell—381(A)
Diffraction of H atoms, T. H. Johnson—381(A)
Hydrogen ions in H_2, absorption of, R. E. Holzer—788(A), 1204
Potassium atoms in nitrogen, mean free path, J. J. Weigle, M. S. Plesset—373(A)
Reflection of Cd and Zn atoms from NaCl crystals, H. A. Zahl—893

Atomic radii (see also **Collision diameter**)
Absorption of H ions in H_2, R. E. Holzer—788(A), 1204

Atomic and molecular radii (see **Collision diameter**)

Atomic structure factors
Electron distribution in atoms of KCl and MgO, D. K. Froman—1330, extrapolation of factors, D. K. Froman—1339

Atoms
Wave functions, approximate, for any atom, J. C. Slater—57
Wave functions for Be, B, C, N, O, F, Ne, C. Zener—51

Aurora
Green line, Zeeman effect, R. Frerichs, J. S. Campbell—151(L)
Origin of auroral green line, R. Frerichs—398
Transverse Zeeman effect of green auroral line, quadrupole radiation, R. Frerichs, J. S. Campbell—1460

Barkhausen effect
Discontinuous changes in length of Ni, C. W. Heaps, A. B. Bryan—326

Book reviews
Baker, Robert H., Astronomy, An Introduction —1419
Brillouin, Leon, Les Statistiques Quantiques—1674
deBroglie, L., Einführung in die Wellenmechanik —369
Campbell, J. W., An Introduction to Mechanics —1517
Castelfranchi, Gaetano. Physique Moderne—155
Emeléus, K. G. The conduction of Electricity through Gases—156
Grube, Georg., Grundzuge der Theoretischen und Angewandten Elektrochemie—371
Haas, A., Einfuhrung in die Theoretische Physik —610
Halpern, O. and H. Thirring. Die Grundgedanken der neueren Quantentheorie—156
Heisenberg, W., The Physical Principle of the Quantum Theory—1516
Hoag, J. Barton., Electron Physics—1420
Jackson, D., The Theory of Approximation —1673
Jäger, Gustav. Theoretische Physik—610
Jahrbuch des Forschungs, Instituts der Allgemeinen Elektricitäts-Gesselschaft, Erster Band, 1928-1929—782
Handbuch der Experimentalphysik, Volume 24, 1 Teil, Kirchner, F. Allgemeine Physik der Röntgenstrahlen—1673; 2 Teil, Lindh, Axel, Röntgenspek troskopie—609
Kiebitz, F. Radio Technic. VI. Die electrischen Wellen—156
Lichtenstein, L., Grundlagen der Hydromechanik —609
Longinescu, I.-N. Essai sur les Principes de la Thermodynamique—155
Millikan, Gale and Edwards. A Manual of Experiments, to accompany A First Course in Physics for Colleges—1594
Moulton, F. R., Differential Equations—1265
Newman, F. H. and V. H. L. Searle. The General Properties of Matter—1517
Pauling and Goudsmit. Structure of Line Spectra—607
Peek, F. W. Jr., Dielectric Phenomena in High Voltage Engineering—369
Planck, Max, Einführung in die Theorie der Wärme, Volume V—781
Pohl, R. W., Einführung in die Mechanik and Akustik—1265
Schaefer, Cl. and F. Matossi, Das Ultrarote Spektrum—608
Silberstein, Ludwig, The Size of the Universe—370
Sommerfeld, Arnold, Wave Mechanics—1594
Thibaud, J., Les Rayons X—781
Worsnop, B. L., X-Rays—782
Wulf, Theodor, Modern Physics—1516
Wyckoff, Ralph W. G., The Analytical Expression of the Results of the Theory of Space Groups—608
Zeleny, Anthony, Elements of Electricity—369
Brownian motion
Theory of, G. E. Uhlenbeck, L. S. Ornstein—823.
Canal rays
Spectra in N_2 excited by, H. D. Smyth, E. G. F. Arnott—1023
Capillary action (see **Surface tension**)
Cataphoresis
In rotating electric fields, E. M. Pugh, C. A. Swartz—787(A), 1495
Cathode rays (see **Electrons, Electrons in gases**)
Chemical bonds
Elastic character of the homopolar, R. C. Yates —555
Vibration of system analogous to benzene ring, R. C. Yates—563
Chemical constitution
And association of homologous compounds, E. C. Bingham, H. J. Fornwalt—381(A)
Chemical reaction
Chain reactions caused by physical structure, N. Rashevsky—376(A)
Organic reactions in gaseous electrical discharge, E. G. Linder—374(A), 1375
Thermodynamic treatment of chemical equilibria in systems composed of real gases, ammonia synthesis, I. Mass action function, L. J. Gillespie, J. A. Beattie—743; Heat of reaction, entropy, L. J. Gillespie, J. A. Beattie—1008
Collision diameter (see also **Electrons in gases, Electron scattering**)
Calculated values, Fermi-Thomas statistics, E. B. Baker—630
From scattering of electrons, M. C. Green—239, 786(A)
Colloids
Cataphoresis in rotating electric fields, E. M. Pugh, C. A. Swartz—787(A), 1495
Compton effect (see **X-Rays, diffraction, scattering**)
Constants, physical
Planck's constant, h, method of computing, A. Lucy—367(L)
Contact potential
Effect on reflection coefficients, H. E. Farnsworth, V. H. Goerke—1190
Contact resistance
Microphonic action, F. Gray—375(A); F. S. Goucher—375(A)
Wave mechanical theory, J. Frenkel—1604
Cosmic rays

Constancy and relation to meteorology, R. A. Millikan—1595
Magnetic deflection, B. Rossi—606(L)
Crystals and crystal structure
Calcite, glancing angle for Ag $K\alpha_1$ rays, C. D. Cooksey, D. Cooksey—85
Cu, magnetic susceptibility, C. G. Montgomery—498
Growing large crystals of the alkali halides, J. Strong—1663
Ice, polar properties of single crystals, J. M. Adams—788(A)
Inner potential of a copper crystal, H. E. Farnsworth—1799(L)
Potential and potential energy of space lattices, C. N. Wall—1243
Properties of metal crystals grown in magnetic fields, A. Goetz, M. F. Hasler—1752
Rotational motion of molecules in crystals, L. Pauling—430
Secondary structure, energy changes, F. Zwicky—378(A)
Cybotactic state
Organic liquids, temperature effect, E. W. Skinner—1625
Dielectric constant
CO_2, temperature and density variations, F. G. Keyes, J. G. Kirkwood—754
H_2, calculated, J. V. Atanasoff—1232
NH_3, temperature and density variations, F. G. Keyes, J. G. Kirkwood—1570
Dielectric properties
Polarization, search for source, R. D. Bennett—65, 1670(L)
Diffraction of atoms (see **Atomic beams**)
Diffraction of electrons (see **Electrons, diffraction**)
Diffraction of corpuscles
H atoms, T. H. Johnson—381(A)
Diffraction of radiation (see **X-Rays, diffraction**)
Discharge of electricity in gases (see also **Arc, spark**)
A.c. arcs, extinction of, T. E. Browne, Jr., F. C. Todd—726
A.c. arcs, restriking of, F. C. Todd, T. E. Browne, Jr.—732
Electrodeless discharge, current, pressure, and frequency relations—M. L. Braun—1195
Electrodeless, Hg vapor, characteristics, H. Smith, W. A. Lynch, N. Hilberry—374(A)
Geissler, hollow cathode, characteristics, C. H. Thomas—374(A)
Heats of condensation of electrons on Mo, Pt and W-K, C. C. Van Voorhis, K. T. Compton—1435
Hollow cathode, excitation processes, spectra, R. A. Sawyer—44
Luminosity, propagation of, J. W. Beams—997
Ne arc, metastable atom and resonance radiation, I. Langmuir, C. G. Found—604(L)
New type of glow-discharge tube, H. J. Reich—373(A)
Organic reactions in gaseous electrical discharge, E. G. Linder—374(A), 1375
Positive ion sheaths, effect of collisions on potential distribution, H. P. Robertson, P. M. Morse—375(A)
Secondary electrons produced by metastable atom and positive ions, W. Uyterhoeven, M. C. Harrington—709
Spectra, variation with discharge, characteristics, E. O. Hulburt—13
Vapor jets in Hg arc, E. Kobel—1636
Dissociation
Nitric acid from absorption spectra, E. L. Kinsey, J. W. Ellis—603(L)
H_2 velocities of H^+ ions formed, W. W. Lozier—1285
H_2O and formation of negative ions in H_2 and H_2O, W. W. Lozier—1417(L)
Dissociation, heat of (see also **Molecular structure and constants**)
O_2, heat of formation, L. C. Copeland—1221
Elasticity
Longitudinal vibration of rods, D. S. Muzzey, Jr.—935
Plastic deformations of ductile metals, A. Nadai—762
Electrets
X-ray study of structure, M. Ewing—378(A)
Electrical conductivity and resistance
Contact between carbon spheres, microphonic action, F. Gray—375(A); F. S. Goucher,—375(A)
Contact resistance, wave-mechanical theory, J. Frenkel—1604
Electrical discharge in gases (see **Discharge of electricity in gases**)
Electromagnetic theory
Diffraction of a circularly symmetrical electromagnetic wave by a co-axial circular disc, J. Bardeen—1482
Transmission of alternating currents through a semi-infinite heterogeneous conducting medium, H. P. Evans—1579
Unified theory, spherically symmetrical field, N. Rosen, M. S. Vallarta—110
Electrons
Deflection in magnetic field on wave mechanics and value of e/m, L. Page—444; criticism, C. Eckart—1014(L), 1514(L); reply, L. Page—1418(L); G. E. Uhlenbeck, L. A. Young—1721; M. S. Plesset—1728; E. H. Kennard—1667(L)
e, by x-ray refraction, H. E. Stauss—1101

e/m from velocity measurements, C. T. Perry, E. L. Chaffee—904
e/m measurements from inertia effects, S. J. Barnett—786(A)
Heat of condensation of electrons on Mo, Pt and W-K, C. C. Van Voorhis, K. T. Compton—1435
Polarization by double scattering, C. T. Chase—1060
Recombination with Cs^+, E. H. Kurth—374(A)
Recombination with protons, theory, E. C. G. Stueckelberg, P. M. Morse—16
Reflection coefficients and contact potentials, H. E. Farnsworth, V. H. Goerke—1190
Scattering by gas molecules, M. C. Green—239, 786(A)
Scattering and operation of Geiger counter, C. T. Chase—984
Electrons, diffraction
Inner potential of a copper crystal, H. E. Farnsworth—1799(L)
Electrons in gases
Formation of, W. Bleakney—1303
Ionization of helium, neon, and argon by electron impact, efficiency, P. T. Smith—1293
Scattering in He, A and H_2, angular and energy distribution, J. H. McMillen—1034
Electrons, photoelectric (see **Photoelectric effect**)
Electrons, scattering (see also **Electrons in gases**)
Effect of small angle scattering on absorption coefficient, M. C. Green—239, 786(A)
Electrons, secondary
From metals bombarded by positive ions, C. L. Utterback, W. Geer—785(A)
Metastable atoms and positive ions, produced by, W. Uyterhoeven, M. C. Harrington—709
Velocity distribution of secondary electrons from molybdenum, T. Soller—1212
Electron tubes
Cathode ray oscillograph, F. Bedell, J. Kuhn—993
High potential x-ray tube, C. C. Lauritsen, B. Cassen—988
Energy states of atoms
Average life of ionized helium, L. R. Maxwell—379(A)
Method of calculation, C. Eckart—149(L)
Energy states of molecules
As effected by interaction, E. C. Kemble, F. F. Rieke—153(L)
Excitation function
He, spectra, W. C. Michels—604(L), 1362
Filters, light
Infrared, controllable transmission, A. H. Pfund—71
Fine structure (see also **Hyperfine structure**)
He 2^3P level, test of spin interaction, G. Breit—383
K radiation of lighter elements, L. Y. Faust—161; M. Soderman—1414(L)
K series, Ca to Ga, B. Kievit, G. A. Lindsay—648
$K\alpha$ of Fe, Co, Ni, Cu, Mo and Ag, $K\beta$ of Mo, J. Valasek—1523
Mo$K\alpha$ lines, double crystal spectrometer, N. S. Gingrich—1050
Unmodified scattered x-rays, J. A. Bearden—791
Fluorescence
Polarized, of rhodamine-B and uranine, E. Merritt, D. R. Morey—1386
Quartz, under low voltage cathode rays, H. Peters—1631
ZnS, under α, β, γ rays, decay characteristics, G. S. Gessner—207
Gamma rays
Wave-length in spectrum of Ra, RaB, RaC, and RaD, including intensity measurements of line and continuous spectra, L. T. Steadman—460
Geiger-counters
Sensitivity, C. T. Chase—984
Geophysics
Wind mixing and diffusion in the upper atmosphere, S. Chapman—1014(L); reply, E. O. Hulburt—1264(L)
Hall effect
Te amalgams, P. I. Wold, J. M. Hyatt—375(A)
Heat of dissociation (see **Dissociation**)
High voltages
Production, M. A. Tuve—1576; M. A. Tuve, L. R. Hafstad and O. Dahl—1261(L)
Hyperfine structure
Cd lines and nuclear spin, C. L. Albright—847
Hyperfine structure and interval rule, H. E. White—1800(L)
S and P terms of Li^+, G. Breit, F. W. Doermann—1732
W$K\alpha$, F. K. Richtmyer, S. W. Barnes, K. V. Manning—1017(L)
Infrared spectra :see also **Spectra, molecular;**
Hg, arc, H. J. Unger—784(A)
High resolution in near infrared, E. D. McAlister—784(A)
Instruments (see **Methods and instruments**)
Intensities in spectra
Bands of diatomic molecules, theory, E. Hutchisson—410
Cameron bands, intensity changes, H. P. Knauss, J. C. Cotton—1099(L)
Ni I, Ni II, Co I multiplets, L. S. Ornstein, T. Bouma—679
X-ray lines in the tantalum L-spectrum, V. Hicks—785(A), 1273

X-ray satellites, intensity ratios, F. K. Richtmyer, L. S. Taylor—1044

Ionization by impact

CO_2 by electrons, H. D. Smyth, E. C. G. Stueckelberg—472

He, Ne, and A, efficiency by electrons 0-4500 volts, P. T. Smith—1293

K and Hg vapors, extra ionization potentials, A. L. Hughes, C. M. Van Atta—214

Multiply charged ions, He, Ne and A, W. Bleakney—1303

NO_2 and N_2O, by electrons, E. C. G. Stueckelberg, H. D. Smyth—478

Velocities of H^+ ions formed, W. W. Lozier—1285

Ions

Cs^+ in H_2, pressure changes, A. C. G. Mitchell—381(A)

Negative ions in hydrogen and water vapor, W. W. Lozier—1417(L)

Recombination of H^+ with electron, theory, E. C. G. Stueckelberg, P. M. Morse—16

Ions in gases

Energy losses at elastic collisions, A. M. Cravath—248

Recombination in A, N_2 and H_2, O. Luhr—24, 788(A); in air and O_2—787(A)

Ions, mobility

Aged ions in air, O. Luhr, N. E. Bradbury—1394

In dry and moist air, J. Zeleny—35

Na^+ in H_2, L. B. Loeb—152(L), 790(A)

Isotopes

Be^8, band spectrum of BeH, W. W. Watson—1019(L)

Cs, K. T. Bainbridge—1668(L)

Effect on band spectrum intensities, J. L. Dunham—1553

N_{15}, O_{18}, O_{17}, abundances, from band spectra, S. M. Naudé—333

Number of isotopes of eight metals, F. Allison, E. J. Murphy—1097(L)

Kinetic theory of gases

Second virial coefficient, experimental and theoretical, H. Margenau—1782

Light waves

Electro-optical modification of, electric oscillations on Kerr cell, L. H. Stauffer—1352

Frequency shifts in dispersing media, G. Breit, E. O. Salant—871

Luminescence

Due to α, β, γ rays, mechanism, D. H. Kabakjian—379(A)

ZnS under α, β, γ rays, decay characteristics, G. S. Gessner—207

Magnetic properties

Barkhausen effect in Ni, discontinuous changes in length, C. W. Heaps, A. B. Bryan—326, criticism, L. W. McKeehan—1014(L)

Cu and Ag, susceptibilities of and structure sensitivity, F. Bitter—978

Electrical resistance tension and magnetization of Ni and permalloy, bibliography included, L. W. McKeehan—948

Gyromagnetic anomaly and rotation by magnetization, S. J. Barnett—789(A)

Hall effect in ferromagnetic materials, E. M. Pugh—1503

Hall effect of Te amalgams, P. I. Wold, J. M. Hyatt—375(A)

Isotropy of a paramagnetic alum, C. G. Montgomery—1661

Li_7 nucleus, momentum of, L. P. Granath—1018(L); see also G. Breit, F. W. Doermann—1262(L)

Molecular field and atomic order in ferromagnetic crystals, L. W. McKeehan—1512(L), 1670(L)

Pt-Co and Pd-Co alloys, F. W. Constant—786(A), 1654

Susceptibility measurements, S. Freed, C. Kasper—1002

Susceptibilities of Bi single crystal, A. B. Focke—319

Susceptibility of Cu crystals, C. G. Montgomery—498

Susceptibility of gases, temperature dependence, F. Bitter—1648

Temperature change on magnetization, W. B. Ellwood—1066

Magnetostriction oscillator

For elastic studies, D. S. Muzzey, Jr.—935

Mechanics

Coupled systems of linear oscillators, A. B. Lewis—568

Solar system, quantization and inverse square law, A. E. Caswell—787(A)

Vibrations of mechanical systems representing organic molecules, R. C. Yates—555

Vibrations of non-planar membrane, G. R. Stibitz—513

Vibration of system representing benzene ring, R. C. Yates—563

Mechanics, quantum

Complex spectra, theory, E. U. Condon—1121

Calculation of energy values, C. Eckart—149(L)

Deflection of electrons in magnetic field and value of e/m, L. Page—444; criticism, C. Eckart—1014(L); 1514(L); reply, L. Page—1418(L); G. E. Uhlenbeck, L. A. Young—1721; M. S. Plesset—1728; E. H. Kennard—1667(L)

Dielectric constant H_2, J. V. Atanasoff—1232

Electrical resistance of contacts, J. Frenkel—1604
Energy states of molecules as affected by interaction, E. C. Kemble, F. F. Rieke—153(L)
Extrapolation of atomic structure factor curves, D. K. Froman—1339
Frequency shifts in dispersing media, G. Breit, E. O. Salant—871
Intensities in band spectra, E. Hutchisson—410
Isotope effect on intensities, J. L. Dunham—1553
Magnetic moment of Li_7 nucleus, G. Breit, F. W. Doermann—1262(L)
Motion of nucleus, effect on spectra, D. S. Hughes, C. Eckart—694
Orbital valency, J. H. Bartlett, Jr.—1096(L)
Paschen-Back effect, incomplete, J. B. Green—157, 379(A)
Principle of identity and the exclusion of quantum states, G. N. Lewis—1144
Recombination of electron and H^+, E. C. G. Stueckelberg, P. M. Morse—16
Relativity, unified field, W. Band—1405
Rotational motion of molecules in crystals, L. Pauling—430
Screening constants, calculation of, C. Eckart—878
Spin interactions as tested by fine structure of He, G. Breit—383
Structure of emission line, theory, F. C. Hoyt—380(A), 860
Symmetrical top, dispersion formula, Raman effect—an erratum, M. Muskat—363
Wave equation, solution, L. A. Young, G. E. Uhlenbeck—1154
Wave functions, approximate, for any atom, J. C. Slater—57
Wave functions for Be, B, C, N, O, F, Ne, C. Zener—51

Mechanics, statistical

Brownian motion, theory of, G. E. Uhlenbeck, L. S. Ornstein—823
Entropy of H_2, D. MacGillavry—1398, W. F. Giauque, H. L. Johnston—1592(L)
Fermi-Thomas method applied to positive ions, E. B. Baker—630

Metastable atoms

Ne, in arc by resonance radiation, I. Langmuir, C. G. Found—604(L)

Meteorology (see also **Atmospheric electricity**)

Cosmic rays and meteorology, R. A. Millikan—1595

Methods and instruments

Calorimeter to measure small heat changes, W. B. Ellwood—1066
Cathode ray oscillograph, correction, F. Bedell, J. Kuhn—993
Diamagnetic susceptibility measurements, S. Freed, C. Kasper—1002
False x-ray lines, J. M. Cork—665
Filters, infrared, controllable transmission, A. H. Pfund—71
Fluorescent dry plates for photographic photometry, G. R. Harrison, P. A. Leighton—779(L)
Geiger counter, voltage effects, C. T. Chase—984
Glow discharge tube—new type, H. J. Reich—373(A)
High potential x-ray tubes, C. C. Lauritsen, B. Cassen—988
High voltage tubes, M. A. Tuve, L. R. Hafstad and O. Dahl—1261(L)
Infrared, high resolution in, E. D. McAlister—784(A)
Low grid-current vacuum tube for current measurements, G. F. Metcalf, B. J. Thompson—1489
Mass spectrograph, H. D. Smyth, E. C. G. Stueckelberg—472
Mechanical models to represent dynamic properties of molecules, C. F. Kettering, L. W. Shutts, D. H. Andrews—531
Minimizing errors in reading distance on photographic plates, D. Cooksey, C. D. Cooksey—80
Optically excited radiation, P. Bender—1535
Photoelectric cells, methods of enhancing sensitiveness, O. R. Olpin—251
Photographic method of determining atomic structure factors, D. K. Froman—1330
Pierce acoustic interferometer, high frequencies, E. Klein, W. D. Hershberger—1262(L)
Rectifier, cupric sulfide-magnesium junction, M. Bergstein, J. F. Rinke, C. M. Gutheil—587; 1022
Refraction of x-rays, H. E. Stauss—1101
Shot-circuit impedence measurements, H. N. Kozanowski, N. H. Williams—1314
Specific heat variation with pressure, E. J. Workman—1083
Velocity Measurement of electrons, C. T. Perry, E. L. Chaffee—904
Viscosimeter, Margules method for absolute values, H. R. Lille—347
X-ray spectrometer, double crystal, J. W. M. Dumond, A. Hoyt—1702

Microphone

Microphonic action of contact resistance, F. Gray—375(A); F. S. Goucher—375(A)

Mobility of ions (see **Ions, mobility**)

Molecular structure and constants (see also **Spectra, molecular**)

Atomic J values and molecular quantum numbers, R. S. Mulliken—1440
Benzene ring model and Raman spectra, R. C. Yates—563

Homopolar chemical bond and Raman spectra, R. C. Yates—555
K_2, heat of dissociation, vibrational constants, W. O. Crane, A. Christy—421
Mechanical models to represent dynamic properties, C. F. Kettering, L. W. Shutts, D. H. Andrews—531
Methane gas, new absorption band, D. M. Dennison, S. B. Ingram—1451
O_2, heat of formation, L. C. Copeland—1221
Orbital valency, J. H. Bartlett, Jr.—1096(L)

Multiplets
Intensity ratios Ni I, Ni II, Co I, L. S. Ornstein, T. Bouma—679

Packing effect
Cs, K. T. Bainbridge—1668(L)

Paschen-Back effect
For intermediate fields, theory, J. B. Green—157, 379(A)

Photoelectric cells
Methods of enhancing sensitiveness, O. R. Olpin—251

Photoelectric effect
Cs thin films on O, L. R. Koller—1639
Direction of emission of photoelectrons, E. O. Lawrence, M. A. Chaffee—1099(L)
Effect of intense electric fields, E. O. Lawrence, L. B. Linford—482; see also L. B. Linford—1100(L)
Inhibition by infrared light, A. R. Olpin—376(A)
Outgassing, action of photoelectrons, R. P. Winch—601(L)
Photoionization of salt vapors, A. Terenin—147(L)
Threshold and current variation with temperature (Hg), D. Roller—738

Photography
Fluorescent dry plates for photographic photometry, G. R. Harrison, P. A. Leighton—779(L)
Unreliability of photographic emulsions for recording distances, improvements, D. Cooksey, C. D. Cooksey—80

Photons
Collisions of, A. L. Hughes, G. E. M. Jauncey—773; S. Vavilov—1590(L)

Planck's constant, h
Method of computing not involving e, A. Lucy—367(L)

Polarization, electrical (see **Dielectric properties**)

Potentials, critical (see also **Spectra**)
Ag I, ionization, spectra, H. A. Blair—1531
CO_2, ionization by electrons, H. D. Smyth, E. C. G. Stueckelberg—472
CO II, ionization, spectra, J. H. Findlay—5
Ionization potentials, successive, calculated, E. B. Baker—630
Ionization of He, Ne and A, W. Bleakney—1303
K and Hg vapor, extra ionization potentials, A. L. Hughes, C. M. Van Atta—214
NO_2 and N_2O, ionization by electrons, E. C. G. Stueckelberg, H. D. Smyth—478

Proceedings of the American Physical Society
Ithaca Meeting, June 19 to 21, 1930—372
Eugene Meeting, June 19 to 21, 1930—783

Quadrupole radiation
Experimental evidence, R. Frerichs, J. S. Campbell—151(L); 1460

Quantum mechanics (see **Mechanics, quantum**)

Radiation
Penetration, therapeutic use, E. Q. Adams—1020(L)
Quenching of resonance radiation (Hg), M. W. Zemansky—919

Radio
Diffraction of a circularly symmetrical electromagnetic wave by a co-axial circular disc, J. Bardeen—1482

Radioactivity
Range of α particles from Th, G. H. Henderson, J. L. Nickerson—1344
γ-ray scattering, ThC, C. Y. Chao—1519
Wave-length measurements of gamma rays for Ra, RaB, RaC, and RaD, L. T. Steadman—460

Raman effect
Benzene and diphenyl, anti-Stokes lines, R. W. Wood—1431
Excitation efficiency, relative, of Hg lines, M. Werth—1096(L)
Geometric isomers, C. F. Ffolliott—367(L)
HBr and NI, E. O. Salant, A. Sandow—1591(L)
Hg and He arc excitation, filters and improved technique, R. W. Wood—1421
Solutions of $NaNO_3$, V. Sterling, E. R. Laird—148(L)
Structure of organic molecules, D. H. Andrews—544
Trimethylethylene, D. Franklin, E. R. Laird—147(L)

Recombination
Electron and H^+, theory, E. C. G. Stueckelberg, P. M. Morse—16
Of ions in A, N_2 and H_2, O. Luhr—24, 788(A)
Electrons with Cs^+, E. H. Kurth—374(A)

Rectifiers
Cupric sulfide-magnesium junction, M. Bergstein, J. F. Rinke, C. M. Gutheil—587; errata—1022

Relativity
Mechanical treatment of temperature distribution in case of radiation W. Anderson—365(L); reply, R. C. Tolman—365(L)
Non-statical solution of Einstein's law of gravitation, H. P. Soh—1515(L)

Projective relativity, O. Veblen, B. Hoffmann—810
Relativistic wave mechanics, of deflected electrons, M. S. Plesset—1728
Temperature equilibrium in a static gravitational field, R. C. Tolman, P. Ehrenfest—1791
Unified physical field, W. Band—1405
Unified theory, spherically symmetrical field, N. Rosen, M. S. Vallarta—110
Resistance of metals (see **Electrical conductivity and resistance**)
Tension coefficient of, H. Rolnick—506
Resonance radiation
Width of line as function of geometry of tube and vapor density, M. W. Zemansky—219, 380(A), 1591(L)
Screening constants
Theory and calculation of, C. Eckart—878
Shielding constants
For any atom, approximate, J. C. Slater—57
Shot effect
Abnormal effect of ions, J. S. Donal, Jr.—1172
Oxide coated filaments, H. N. Kozanowski, N. H. Williams—1314
Skylight
Energy distribution in ultraviolet, B. O'Brien—381(A)
Spark
Time lag, relation to photoelectrons from cathode, J. A. Tiedeman—376(A)
Specific heats
Gases, variation with pressure, calculated values, L. G. Hoxton—1091
Gases, variation with pressure, experimental values, E. J. Workman—1083
Organic crystals, calculated from mechanical models, A. B. Lewis—568
Spectra, absorption
Benzene in the liquid and vapor state, E. D. McAlister, H. J. Unger—1799(L)
Nitric acid dissociation, by absorption spectra, E. L. Kinsey, J. W. Ellis—603(L)
Spectra, atomic
Ag II and Pd II, extension, H. A. Blair—173
Ag I, classification and new lines, H. A. Blair—1531
Atomic *J* values and molecular quantum numbers, R. S. Mulliken—1440
Auroral green line, Zeeman effect, quadrupole radiation, R. Frerichs, J. S. Campbell—151(L), 1460
Co II, classification, J. H. Findlay—5
Cu arc, correction to published list, A. G. Shenstone—603(L)
Diaphantine equation, hydrogen spectrum, T. H. Gronwall—1671(L)
Energy states, calculation, C. Eckart—149(L)
Excitation function of helium, W. C. Michels—604 (L); 1362
Excited in hollow cathode discharge, R. A. Sawyer—44
Fe lines, classification, H. D. Babcock—784(A)
Forbidden lines and quadrupole terms, L. D. Huff, W. V. Houston—842
He, new lines in arc and spark, P. G. Kruger—855
Hg lines, fluorescence, polarization of, A. C. G. Mitchell—1589(L)
Hg 2537, ratio of emission to absorption line width, M. W. Zemansky—219, 380(A), 1591(L)
Hyperfine structure Cd lines, C. L. Albright—847
Hyperfine structure of *S* and *P* terms of two electron atoms, G. Breit, F. W. Doermann—1732
Kr and Xe, wave-lengths, C. J. Humphreys—380(A)
Li I and Li II, calculated effect of motion of nucleus, D. S. Hughes, C. Eckart—694
Nitrogen atomic, resonance series, J. J. Hopfield—789(A)
Ni I, Ni II, Co I, intensity measurements, multiplet intensity ratios, L. S. Ornstein, T. Bouma—679
O, singlet system, origin of auroral line, R. Frerichs—398
Oxygen, atomic, resonance series, J. J. Hopfield—789(A)
Pb III and Pb IV, classification, S. Smith—1
Pd I analysis, A. G. Shenstone—669
Polarization of Hg resonance line, S. Mrozowski—1591(L)
Quenching of Cd lines by gases, P. Bender—1535
Rh, term values, A. G. Shenstone, J. J. Livingood—380(A)
Structure of emission line, theory, F. C. Hoyt—380(A), 860
Theory of complex spectra, E. U. Condon—1121
Wave equation, application to hydrogenic atoms, L. A. Young, G. E. Uhlenbeck—1154
Wave-length list for extreme ultraviolet, J. M. MacInnes, J. C. Boyce—368(L)
Spectra, continuous
From gases lighted by strong discharge, E. O. Hulburt—13
Spectra, general
Excitation function of helium, W. C. Michels—604(4); 1362
Fluorescence of quartz, H. Peters—1631
Fluorescence, polarization of, E. Merritt, D. R. Morey—1386
From gases lighted by strong discharge, E. O. Hulburt—13
General Electric type S-1, spectrum, D. Dooley—1476

He, continuous spectrum in condensed discharge 500–1100A, J. J. Hopfield—784(A)
Hg vapor absorption bands, origin of, S. Mrozowski—1168
Optical excitation, P. Bender—1543
Oscillating arc in spectrochemical analysis, E. Z. Stowell, W. S. Huxford—1348
Oxygen, auroral and nebular lines, I. S. Bowen—600(L)
Quenching of mercury resonance radiation by nitrogen and carbon monoxide, J. Kaplan—788(A)
Radiation from a high potential x-ray tube, C. C. Lauritsen—1680
Tungsten mercury arc, peculiarities, W. E. Forsythe, M. A. Easley—150(L)
Tungsten mercury arc, spectral energy, B. T. Barnes—1468

Spectra, molecular
Absorption bands of K_2, W. O. Crane, A. Christy—421
Atomic J values and molecular quantum numbers, R. S. Mulliken—1440
Band in Be^8H spectra, W. W. Watson—1019(L)
Bands in the absorption spectrum of mercury, J. G. Winans—1020(L)
CaF and SrF, interpretation of, A. Harvey, F. A. Jenkins—1413(L)
Cameron bands in CO intensities, H. P. Knauss, J. C. Cotton—1099(L)
CO third positive group, J. Kaplan—784(A)
Electronic states in halogen bands, R. S. Mulliken—699
Energy states, effect of interaction, E. C. Kemble, F. F. Rieke—153(L)
Halogen bands, interpretation, R. S. Mulliken—364(L)
H_2, B-A resonance bands, quantum assignments, H. H. Hyman—187
Intensities in bands, J. Kaplan—778(L)
Isotope effect on intensities, J. L. Dunham—1553
Liquids, absorption in infrared, effect of pressure, J. R. Collins—305
Methane gas, new absorption band, theory of overtones, D. M. Dennison, S. B. Ingram—1451
N_2, absorption bands, J. J. Hopfield—789(A)
N_2 and O_2, abundances of N_{15}, O_{18} and O_{17}, S. M. Naudé—333
N_2 band spectra, by canal ray excitation, H. D. Smyth, E. G. F. Arnott—1023
Notation, report on, R. S. Mulliken—611
O_2 bands, new, J. J. Hopfield—789(A)
Optical excitation of CdH and ZnH bands, P. Bender—1543
Organic liquids, absorption in infrared, high resolution, R. B. Barnes—296
S_2, vibrational and rotational analysis—S. M Naudé, A. Christy—1801(L)
Symmetrical diatomic molecules, intensities, theory, E. Hutchisson—410
ZnH and CdH bands, Zeeman effect, W. W. Watson—1134

Spectrograph, spectrometer
X-ray, double crystal, J. W. M. Dumond, A. Hoyt—1702

Spectroscopic technique
Unreliability of photographic emulsions for recording distances, improvements, D. Cooksey, C. D. Cooksey—80

Sun (see **Astrophysics**)

Surface tension
Of saturated vapors, maximum, J. L. Shereshefsky—377(A)
Retention of liquids between homogeneous spheres, W. O. Smith, P. D. Foote, P. F. Busang—524

Susceptibility, magnetic (see **Magnetic properties**)

Thermal expansion
M-M-M alloy, P. Hidnert, W. T. Sweeney—787(A)

Thermionic emission of electrons
Efficiency of emission from oxide coated filaments, B. J. Thompson—1415(L); erratum—1802(L)
Oxide coated filaments, shot effect, H. N. Kozanowski, N. H. Williams—1314
Oxide coated Ni-Ba alloy, N. C. Beese—1309
Shot effect, abnormal, of ions, J. S. Donal Jr.—1172
Work function and constant A for thoriated tungsten, W. B. Nottingham—376(A)

Thermodynamics
c_p variation, calculated from p-v-t data, L. G. Hoxton—1091
Entropy, elastic strain, W. S. Kimball—377(A)
Entropy of crystalline hydrogen, L. Pauling—430
Entropy of H_2, D. MacGillavry—1398; W. F. Giauque, H. L. Johnston—1592(L)
Equations of state and thermodynamic functions for a substance with variable specific heat, W. P. Boynton—787(A)
Equilibrium, ammonia synthesis reaction. I. Mass action function, L. J. Gillespie, J. A. Beattie—743. II. Heat of reaction entropy, L. J. Gillespie, J. A. Beattie—1008
Fundamental correspondence to geometry, J. Q. Stewart—377(A)
Gibbs-Dalton law of partial pressures, L. J. Gillespie—121
Mechanical treatment of temperature distribution of radiation, W. Anderson—365(L); reply, R. C. Tolman—365(L)
Real gases and mixtures, J. A. Beattie—132

Surface tension of saturated vapors, J. L. Shereshefsky—377(A)
Temperature equilibrium in a static gravitational field, R. C. Tolman, P. Ehrenfest—1791
Thermoelectric effect
In crystals grown in magnetic fields, A. Goetz, M. F. Hasler—1752
Tribothermoluminescence
In crystals, glass and frits, R. E. Nyswander, B. E. Cohn—1257
Ultrasonic waves
Velocity and absorption in O_2, W. H. Pielemeier—1005, 1667(L); J. C. Hubbard—1668(L)
Velocity in water vapor, G. E. Thompson—77
Vacuum tubes
High voltage, M. A. Tuve, L. R. Hafstad, O. Dahl—1261(L)
Low grid-current tube, type F. P.-54, G. F. Metcalf, B. J. Thompson—1489
Viscosity
Margules method, absolute values, H. R. Lille—347
Vision theory of
Electromagnetic theory of sight and color vision, S. R. Cook—790(A)
Wave functions
For any atoms, approximate, J. C. Slater—57
For Be, B, C, N, O, F, Ne, C. Zener—51
Work function (see **Thermionic emission**)
X-rays, absorption
By Li, K. C. Mazumder—457
Elements Ca to Ga, fine structure, B. Kievit, G. A. Lindsay—648
In gases, W. W. Colvert—161
Penetration, therapeutic use, E. Q. Adams—1020(L)
Soft rays in gases, C $K\alpha$ in air, E. Dershem, M. Schein—378(A)
X-rays, diffraction, reflection and scattering
Compton effect, position and structure of modified line, F. L. Nutting—1267
Compton shift, accurate measure, N. S. Gingrich—364(L)
Electric fields and diffraction pattern of a liquid, G. W. Stewart—1413(L)
Fine structure lines, with double crystal spectrometer, N. S. Gingrich—1050
Fine structure of unmodified line, J. A. Bearden—791
Liquids, effect of temperature, E. W. Skinner—1625
Multiple scattering in the Compton effect, J. W. M. Dumond—1685
Scattering coefficient as a function of wave-length and atomic number, E. N. Coade—778(L), 1109
Scattering power of Ni, Cu, Fe, for various wave-lengths, R. W. G. Wyckoff—1116
Thin metallic films, reflection from, J. E. Henderson, E. B. Jordan—785(A)
Width and structure of modified $K\alpha_1$, $K\alpha_2$, P. A. Ross, J. C. Clark—378(A)
X-rays, emission
Fine structure, $K\alpha$ of Fe, Co, Ni, Cu, Mo and Ag, $K\beta$ of Mo, J. Valasek—1523
Hyperfine structure W $K\alpha$, F. K. Richtmyer, S. W. Barnes, K. V. Manning—1017(L)
$K\alpha_3$ of Cu, origin of, and Richtmyer double group hypothesis, J. W. M. Dumond, A. Hoyt—799; J. W. Dumond—1015(L)
Ta, L-spectrum relative intensities of lines, V. Hicks—785(A), 1273
X-rays, polarization
Continuous x-rays from single electron impacts, B. Dasannacharya—1675
X-rays, reflection and refraction
Glancing angle of calcite for Ag $K\alpha_1$ C. D. Cooksey, D. Cooksey—85
X-rays, scattering
Breadth of modified line, J. W. M. Dumond—146(L)
X-rays, spectra
Fine structure in K-radiation of lighter elements, L. Y. Faust—161; M. Soderman—1414(L)
X-rays, spectra and spectroscopy
False lines in x-ray grating spectra, J. M. Cork—665
Intensity ratios of satellites, F. K. Richtmyer, L. S. Taylor—1044
Radiation from a high potential x-ray tube, C. C. Lauritsen—1680
X-rays, tubes
Currents through walls, D. P. LeGalley, W. R. Ham, M. W. White—379(A)
Zeeman effect
Auroral green line. R. Frerichs, J. S. Campbell—1460
Incomplete Paschen-Back effect, calculation, J. B. Green—157, 379(A)
In Co II spectrum, J. H. Findlay—5
In quadrupole radiation, R. Frerichs, J. S. Campbell—151(L)
Misplacements and g values, H. N. Russell—1590(L)
ZnH and CdH bands, W. W. Watson—1134